A NEW GENUS IN THE PANICEAE, AND A KEY TO THE AFRICAN GENERA OF THE SUB-TRIBE DIGITARIASTRAE.

By Miss L. Chippindall.

HYLEBATES L. Chippindall. Genus novum e tribu *Panicearum*; a generibus omnibus e sub-tribu *Digitariastrarum* spiculis breviter aristatis in panicula diffusa laxe dispositis differt.

Spiculae omnes similes, lanceolatae, dorso compressae, breviter aristatae, solitariae, pedicellis capillaribus inaequalibus articulatae, in ramis longis gracilibus paniculae ortae. *Anthoecia* 2: inferum ad lemma redactum; superum fertile, infero paullo brevius. *Glumae* dissimiles, inaequales, muticae; inferior spicula valde brevior, acuta, hyalina, enervis; superior spicula paullo brevior, late lanceolata, tenuiter membranacea vel subhyalina, 3-nervis. *Anthoecium inferum*: lemma spicula aequilongum, breviter aristatum, late lanceolatum, membranaceum, 5-nerve. *Anthoecium superum* lanceolatum, acutum: lemma laeve, tenuiter chartaceum, marginibus planis hyalinis, tenuissime 5-nerve; palea lemmati aequilonga, tenuiter 2-nervis. *Lodiculae* 2, parvae, cuneatae, glabrae. *Stamina* 3; antherae lineari-oblongae. *Ovarium* lanceolato-ellipticum, glabrum; styli distincti, terminales; stigmata plumosa. *Caryopsis* matura ignota. *Gramen* annuum; culmi geniculato-adscendentes, e nodis inferioribus radicantes; ligulae ad seriem ciliorum redactae; foliorum laminae planae, late lanceolatae; panicula diffusa, ramis fasciculatis, spiculis laxe dispositis.

Species unica, Africae tropicae australis incola.

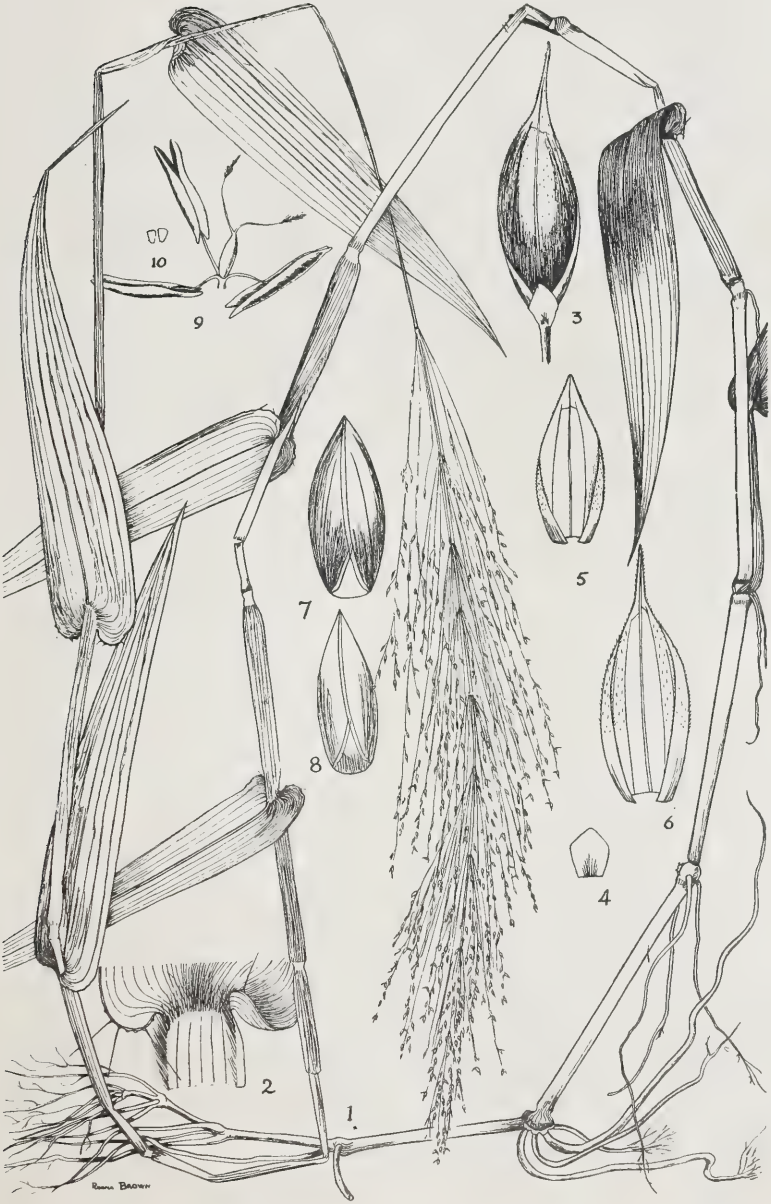
A new genus belonging to the *Paniceae* and differing from all African genera in the sub-tribe *Digitariastrae* by its paniculate inflorescence, and from extra-african genera with this type of inflorescence by its awned spikelets.

Spikelets all alike, lanceolate, dorsally compressed, shortly awned, falling entire or almost so from their capillary, unequal pedicels, solitary and scattered, with indefinite orientation, on the slender, mostly 3-nate, divided branches of an open panicle. *Florets* 2: lower reduced to the valve; upper bisexual, slightly shorter than the lower. *Glumes* dissimilar, very unequal, muticous; lower very much shorter than the spikelet, acute, hyaline, nerveless; upper about three-quarters the length of the spikelet, broadly lanceolate, delicately membranous to subhyaline, 3-nerved. *Lower floret*: valve as long as and determining the outline of the spikelet, shortly awned, broadly lanceolate, acuminate upwards, slightly firmer in texture than the upper glume, 5-nerved. *Upper floret* lanceolate, shortly acute: valve smooth, thinly chartaceous with flat, hyaline, overlapping margins, very faintly 5-nerved: valvule similar to the valve but slightly thinner and faintly 2-nerved. *Lodicules* 2, small, cuneate, glabrous. *Stamens* 3; anthers linear-oblong. *Ovary* lanceolate-elliptic, glabrous; styles distinct, terminal, capillary; stigmas plumose. *Mature grain* unknown. An annual grass with geniculately ascending culms decumbent at the base and rooting from the lower nodes; ligules reduced to a dense fringe of hairs; leaf-blades flat, broadly lanceolate from a cordate base; inflorescence an open panicle with fascicled, laxly divided branches; spikelets pale green.

Hylebates cordatus L. Chippindall, species nova (adhuc unica).

Gramen annuum. *Culmi* geniculato-adscendentes, e nodis inferioribus radicantes, multinodes, ad 1·5 m. altum. *Foliorum vaginae* internodiis breviores, striatae; ligulae ad seriem densam ciliorum redactae; laminae planae, late lanceolatae, basi cordatae, scabridae, usque ad 18 cm. longae et 3 cm. latae. *Panicula* ovata, demum laxissima, 14—26 cm. longa, usque ad 10 cm. lata; rhachis striata, internodio infimo usque ad 4 cm. longo; rami plerumque verticillati, graciles, inferiores usque ad 13 cm. longi; pedicelli tenuissimi, inaequales. *Spiculae* lanceolatae, breviter aristatae, scabridae, 3·8 mm. longae (aristis inclusis), circa 1 mm. latae. *Glumae* valde inaequales, muticae; inferior acuta, glabra, laevis, enervis, ·7—·8 mm. longa; superior lanceolata, scabrida, 3-nervis, 2·5 mm. longa. *Lemma inferum* late lanceolatum, scabridum, 5-nerve, 3·8 mm. longum, breviter aristatum, arista ·8—·9 mm. longa, scabrida. *Lemma superum* laeve, tenuissime 5-nerve, 2·75 mm. longum. *Palea* lemmati aequilonga, tenuiter 2-nervis. *Lodiculae* circiter ·4 mm. longae, glabrae. *Antherae* 1·5—2 mm. longae.

Culms geniculately ascending, decumbent at the base and rooting from the lower nodes, 1·5 m. high, simple, terete or slightly compressed, soft, many-noded, striate, apparently glabrous and smooth, but minutely tubercular-asperulous between the striae and below the inflorescence. *Leaf-sheaths* terete, slightly more than half the length of the internodes, strongly striate, the lower broad and at length slipping from the culms,



Hylebates cordatus. 1. *Plant,* × ½ (the spikelets are proportionally too small); 2. *Ligule,* c. natural size. 3. *Spikelet,* × 11½. 4. *Lower glume,* × 10. 5. *Upper glume,* × 10. 6. *Lower valve,* × 10. 7. *Upper valve,* × 10. 8. *Upper valvule,* × 10. 9. *Stamens and pistil,* × 10. 10. *Lodicules,* × 10. *Del.* Rhona Brown.

glabrous and smooth below, tuberculate and scaberulous upwards, margins shortly but densely white ciliate, the cilia increasing in length towards the mouth ; ligule reduced to a dense fringe of long hairs ; blades flat, broadly lanceolate from a much rounded, cordate base, tapering to a sub-setaceous point, firm, papery, up to 18 cm. long and 3 cm. wide, very scabrid on the upper surface, less so on the under, tuberculate on both surfaces, scantily hispid, margins cartilaginous and very scabrid, with tubercle-based hairs towards the base ; midrib slender, whitish, prominent downwards ; primary lateral nerves very fine, 4 on each side of the midrib. *Panicle* exserted from the uppermost sheath, ovate, very lax, 14—26 cm. long and up to 10 cm. wide, somewhat contracted at first, then widely open and spreading ; main axis channelled on one side, filiform upwards, striate and, like all the divisions of the panicle, scaberulous to scabrid, lowest internode up to over 4 cm. long ; primary branches 3-nate, or solitary towards the top of the inflorescence, up to 13 cm. long, mostly divided from near the base and then naked for up to 5·5 cm. ; secondary branches filiform to sub-capillary, undivided for up to 3·5 cm. from the base, then irregularly branched again, often scantily, with the ultimate divisions capillary ; pedicels variable in length, scaberulous, capillary with discoid tips. *Spikelets* lanceolate, shortly awned, gaping at maturity, pale green, 3·8 mm. long, including the awn. *Glumes* dissimilar, very unequal, muticous ; lower acute, rhomboidal, separated from the rest of the spikelet by a ·3 mm. long internode, almost entirely hyaline, whitish, glabrous and smooth, nerveless, ·7—·8 mm. long ; upper lanceolate, shortly acute, clasping the spikelet at the base, delicately membranous downwards between the nerves, otherwise hyaline, scaberulous upwards, especially towards the margins, strongly 3-nerved, nerves green and scaberulous, the lateral connected to the mid-nerve by transverse venules near the top, 2·5 mm. long. *Lower valve* resembling the upper glume in texture but slightly wider and firmer, as long as the spikelet and determining its outline, acuminate and produced into a short, ·8—·9 mm. long, scabrid awn, shortly hispid upwards, especially towards the margins, with 3 percurrent and 2 shorter lateral nerves, nerves green and scabrid, the inner lateral ones connected to the midnerve by transverse venules at the tip. *Upper valve* thinly chartaceous except for a small, hyaline region at the base and the flat, hyaline margins which overlap except at the tip and base, muticous, smooth, whitish at first and then turning straw-coloured, very faintly 5-nerved, 2·75 mm. long. *Valvule* nearly as long as and similar to the valve, but faintly 2-nerved and without the hyaline region at the base. *Lodicules* 2, cuneate, glabrous, about ·4 mm. long. *Stamens* 3 ; anthers linear-oblong, 1·5—2 mm. long.

Hab. Portuguese East Africa. Quelimane district: from Mocuba to Milange, in open *Brachystegia* and *Berlinia* forest, 18th March, 1943, *A. R. da Tôrre* 4945.

The new genus belongs to the group of genera in the *Paniceae* known as the *Digitariastrae.* They are characterised by their fertile valves being thinly chartaceous to cartilaginous and not rigid at maturity, and having flat, hyaline margins.

Hylebates differs from all the African genera of the section in having a paniculate inflorescence. In this respect it resembles the American and Australian genera *Leptoloma* Chase, *Anthaenantia* Beauv. and *Homopholis* C. E. Hubbard, but from these it may at once be distinguished by its shortly awned spikelets.

There are four other African genera with awned spikelets, namely, *Snowdenia* C. E. Hubbard (*Beckera* Fres.), *Chloridion* Stapf, *Acritochaete* Pilger and *Alloteropsis* Presl., and the structure of the spikelet in *Hylebates* cannot be identified with any of them. *Snowdenia* and *Chloridion* are awned from the barren valve, but the awn is relatively much longer, especially in the latter genus, while in both genera the glumes are much shorter than the spikelet, the lower being entirely suppressed in *Chloridion.* Furthermore, the fertile valve in *Snowdenia* is shortly awned and its valvule is nerveless and only about one half the length of the floret. *Acritochaete* has tangled awns from the upper glume and lower valve, while *Alloteropsis* is awned from the upper valve.

In habit and size, the new grass bears a strong resemblance to *Ottochloa arnottiana* (Stapf) Dandy. *Ottochloa* is a small genus whose affinities in the *Paniceae*, as Dr. Stapf points out, (Fl. Trop. Afr. IX, 742 (1920) are not clear. The hyaline margins of the fertile valve, as well as the short upper glume, suggest its inclusion in the *Digitariastrae*, but the sub-coriaceous texture of the valve itself at maturity is in alignment with the characters of the *Panicastrae.* An unusual feature is the fact that the margins of this valve are ciliolate.

In the absence of material for study, it has been deemed wise to omit *Ottochloa* from the key to the African genera of the *Digitariastrae* given below. The key is based on that prepared by Dr. Stapf for the Flora of Tropical Africa IX, and has been drawn up to include the four genera described since the publication of this work in 1917. They are: *Snowdenia* C. E. Hubbard, *Megaloprotachne* C. E. Hubbard, *Digitariopsis* C. E. Hubbard and the new genus *Hylebates.*

KEY TO THE AFRICAN GENERA OF THE DIGITARIASTRAE.

- Spikelets awnless.
  - Lower glume as long as the spikelet .. .. .. 1. *Megaloprotachne.*
  - Lower glume minute or altogether suppressed.
    - Spikelets produced at the base into a slender, acute spur 2. *Digitariopsis.*
    - Spikelets not spurred .. .. 3. *Digitaria.*
- Spikelets awned.
  - Inflorescence an open panicle .. .. 4. *Hylebates.*
  - Inflorescence composed of solitary, scattered, digitate or sub-digitate racemes.
    - Racemes solitary.
      - Awns from the barren and fertile valves ; upper glume reduced to a small, nerveless scale ; upper valvule about ½ as long as the floret ; peduncles usually in 2's or 3's from the uppermost node, rarely solitary .. .. 5. *Snowdenia.*
      - Awns from the upper glume and barren valve, tangled ; upper glume ⅔ the length of the spikelet, 3-nerved ; upper valvule nearly as long as the floret ; peduncles solitary .. .. 6. *Acritochaete.*
    - Racemes distant on a common axis, or digitate or sub-digitate.
      - Racemes distant on a common axis ; upper glume long-awned .. .. 6. *Acritochaete.*
      - Racemes digitate or sub-digitate ; upper glume awnless.
        - Awn from the fertile valve ; both glumes present, upper nearly as long as the spikelet .. .. 7. *Alloteropsis.*
        - Awn from the barren valve ; lower glume suppressed, upper very small .. .. .. 8. *Chloridion.*

ENUMERATION OF THE AFRICAN GENERA OF THE DIGITARIASTRAE.

1. *Megaloprotachne* C. E. Hubbard in Kew Bull. 1929, 319. Species 1. South Africa : Bechuanaland Protectorate ; Northern Rhodesia.
2. *Digitariopsis* C.E. Hubbard in Hook. Ic. Pl. XXXV, t.3420 (1940). Species 1 or 2. Northern Rhodesia ; Belgian Congo.

Note.—Digitariopsis Redheadii C. E. Hubbard l.c.

This beautiful little grass, with its silky, rhomboid spikelets, was described from a gathering (Milne-Rehead 4591) in the Mwinilunga District, Northern Rhodesia, not far from the borders of the Belgian Congo.

The single record of it in the Kew Herbarium seems to indicate its rarity, yet a small collection of Gramineae and Cyperaceae received recently from Mr. P. Quarré, botanist to the Comité Special du Katanga contained two specimens of it. One of them (*Quarré* 3989) is typical *D. Redheadii* e descr., and was found growing in moist soil near the Kimilolo River at Keyberg, near Elizabethville in the Belgian Congo.

The second specimen (*Quarré* 4127) is rather different, although the structure of the spikelet, with its spurred base, leaves no doubt as to its generic affinity. The primary axis of the panicle is, in the type, finely pilose, but the branches are glabrous. In the new specimen, the axis is glabrous while the graceful, capillary branches bear numerous fine white hairs which are mostly gathered into scanty tufts and measure up to nearly 1 cm. in length. The racemes are shorter and less dense than they are in the plant which matches *D. Redheadii*, and the spikelets somewhat larger.

Unfortunately, the specimen is incomplete, consisting only of an inflorescence, culm and a single leaf, so it is impossible to ascertain whether or not it constitutes a second species, or merely another form of *D. Redheadii*.

3. *Digitaria* Haller in Hist. Stirp. ii, 244 (1768); Stapf in Dyer, Fl. Cap. VII, 372 (1898); Stapf in Fl. Trop. Afr. IX, 422 (1919). Species over 100. Found in the warm regions of both hemispheres.
4. *Hylebates* L. Chippindall in Journ. S.A. Bot., XI, 1945. Species 1. Portuguese East Africa.
5. *Snowdenia* C. E. Hubbard in Kew Bull. 1929, 28. (*Beckera* Fresen.). Species 5. East Africa: Uganda, Tanganyika; Abyssinia.
6. *Acritochaete* Pilger in Engl. Bot. Jahrb. XXXII, 53 (1902). Species 1. East Africa: Uganda, Tanganyika.
7. *Alloteropsis* J. Presl in C. Presl, Rel. Haenk. i, 343 (1830) emend. Hitchc. in Contrib. U.S. Nat. Herb. xii, 210 (1909). Species about 9. In the tropics and extending into warm temperate regions.
8. *Chloridion* Stapf in Hook. Ic. Pl. XXVII, t. 2640 (1900). Species 1. South Africa: Bechuanaland Protectorate, Northern Transvaal; Southern and Northern Rhodesia; Portuguese East Africa; East Africa: Nyasaland; Belgian Congo.